Claims

1. A waste sterilization and size reduction apparatus comprising:
a sealable pressurisable treatment vessel having an internally mountable auger, the mounted auger adapted to rotate relative to a longitudinal axis of the sealable vessel, the vessel having an entry port and an exit port, the entry port adapted to effect the introduction of waste material onto the auger, and the exit port adapted to effect the removal of waste material once treated within the vessel from the vessel, the vessel being further adapted to incorporate a plurality of high temperature steam entry ports, and wherein on introduction of waste material into the vessel and the sealing of the vessel, the agitation of the waste material within the vessel effected by the rotation of the auger and the concurrent passage of high temperature steam under pressure onto the agitated material affects a sterilization and size reduction of the waste material.

2. The apparatus as claimed in claim 1 wherein the waste material is municipal waste.

3. The apparatus as claimed in claim 1 or claim 2 wherein the steam entry ports are located along an axis of the auger so as to effect the introduction of steam outwardly onto the waste material disposed therein.

4. The apparatus as claimed in claim 1 or claim 2 wherein the steam entry ports are arranged on an outside surface of the treatment vessel so as to effect the introduction of steam inwardly onto the waste contained within the treatment vessel.

5. The apparatus as claimed in any preceding claim wherein the auger comprises an axle and a screw thread extending from the axle, the diameter of the screw thread being such that the cross-sectional area of the auger substantially equates to the inner diameter of the vessel.

6. The apparatus as claimed in any preceding claim further comprising lifting fins adapted to assist in an agitation of the waste.

7. The apparatus as claimed in any preceding claim wherein the entry and exit ports are provided with sealable doors which when the apparatus is in use are closed to effect a sealing of the vessel.

8. The apparatus as claimed in any preceding claim further comprising a pressure control valve adapted to effect an altering of the pressure within the vessel.

9. The apparatus as claimed in any preceding claim further comprising a hopper adapted to dispense waste through the entry port and onto the auger.

10. The apparatus as claimed in any preceding claim wherein the auger is about 10 m long.

11. A method of treating municipal waste materials comprising the steps of:

a) introducing waste material through an entry door onto an auger mounted within a sealable vessel,

b) sealing the vessel,

c) effecting the creation of a vacuum within the vessel,

d) applying steam to the waste material contained within the vessel and agitating the waste material by a rotation of the auger in both a forward and reverse direction while the steam is being applied, and

wherein during the application of the steam to the waste material the temperature within the vessel is maintained above 120^0C.

12. The method as claimed in claim 11 wherein the temperature is preferably at least 130^0C and more preferably at least 134^0C.

13. The method as claimed in claim 11 or 12 wherein the steam is applied for a time period of about 40 minutes.

14. The method as claimed in any one of claims 11 to 13 wherein on completion of the cycle the treated waste material is removed from the sealable vessel via an exit door remotely located from the entry door.

15. The method as claimed in any one of claims 11 to 14 wherein the vacuum is created within the vessel by injecting steam into an external condenser and opening a vessel exhaust valve, thereby drawing air out from the vessel.

16. The method as claimed in any one of claims 11 to 15 wherein any condensate formed during the application of steam to the waste material is removed from the vessel.

17. The method as claimed in claim 16 wherein the withdrawn condensate is filtered prior to being returned to a boiler for the formation of additional steam to be introduced to the vessel.

18. The method as claimed in any one of claims 11 to 17 wherein on completion of the treatment process any remaining condensate is removed from the vessel and the material contained within the vessel is dried.

19. A method for the treatment of waste materials substantially as hereinbefore described with reference to Figure 1 or Figures 2 and 3 of the accompanying drawings.

20. A waste treatment apparatus for the treatment of waste materials substantially as hereinbefore described with reference to Figure 1 or Figures 2 and 3 of the accompanying drawings.